PRINT Your Name:____________________

Quiz – February 28, 2006

Find $\int_0^{+\infty} e^{-2x}\,dx$.

Answer: We see that

$$\int_0^{+\infty} e^{-2x}dx = \lim_{b\to\infty}\int_0^b e^{-2x}dx = \lim_{b\to\infty} \left.\frac{e^{-2x}}{-2}\right|_0^b = \lim_{b\to\infty}\frac{e^{-2b}}{-2} - \frac{1}{-2}$$

$$= \lim_{b\to\infty}\frac{1}{-2e^{2b}} - \frac{1}{-2} = \boxed{\frac{1}{2}}.$$